

REMARKS

Applicant thanks the Examiner for the thorough consideration given the application. Claims 3, 6-8, 11, 28-29 and 41-50 have been cancelled without prejudice or disclaimer hereby. New dependent claims 51-60 have been added. Thus, claims 1, 2, 4, 5, 9, 10, 12-27, 30-40, and 51-60 are now pending in the application. Applicant respectfully requests the Examiner to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

I. Claims 1, 2, 4, 5, 6, 9, 12-15, 19-21, 27, and 30-40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Maeda* (EP 0945916) in view of *Alderson* (U.S. Pat. No. 5,817,583). This rejection is respectfully traversed.

Independent claims 1 and 27

At the outset, the Applicant submits that the above rejection has been rendered moot by the present amendments¹ to claims 1 and 27, which clarify that the polymeric base material comprises a phase-change material and up to 20% by weight of ethylene-vinyl acetate. The phase-change material comprises a paraffin wax, a synthetic wax, or equivalents thereof. The amendments further clarify that the phase-change material has a reflow temperature that allows the thermally conductive material in particulate form suspended within the polymeric base material to flow into gaps and thereby at least reduce thermal impedance, such as between an electronic device and the polymeric base material. These features are not disclosed, taught, or suggested by the combination of *Maeda* and *Anderson*, and are accordingly not rendered obvious thereby. Indeed, the Office Action dated 01/07/08 admits as much in its rejection of claim 17 by stating on page 6: “*Maeda* teaches the electromagnetic absorbing material above including the silicone gel matrix, but does not give additional examples.”

¹ Applicant notes that the amendments to independent claims 1 and 27 are fully supported by the application as originally filed. For example, paragraph [0050] of the application as published as U.S. Patent Application Publication 2006/0099403 states in part “For example, a mixture of ninety-five parts by weight of the paraffin wax and five parts by weight of the ethylene-vinyl acetate copolymer may be used. Alternatively, a mixture of twenty-five parts by weight of the paraffin wax and six parts by weight of the ethylene-vinyl acetate copolymer may be used.” Applicant further notes that 5 parts divided by 31 total parts (5 parts + 26 parts) provides a percentage of about 19.35%.

In that same 01/07/08 Office Action as well as in the instant Final Office Action in regard to claim 17, the Patent Office relies upon *Yenni* (U.S. Pat. No. 6,090,728) to *Yenni* for the disclosure of a resin matrix comprising a mixture of paraffin wax and ethylene vinyl acetate copolymer (as in recited in claim 17). But *Yenni* recites “Examples of polymeric materials useful as fiber-coat materials” that include an extensive, numerous list of 21 different component materials, all of which are presented as equally suitable. One skilled in the art randomly selecting ethylene-vinyl acetate and paraffin wax from the 21 different component materials disclosed in *Yenni* would be $1/21 \times 1/20$, which equals a chance of 1 out of 410 different combinations. A skilled artisan contemplating the recitation of 21 different component materials in *Yenni* would not have considered the combination of two select material components to be an exercise of routine ordinary skill. Rather, a person of ordinary skill in the art could only have selected, if at all, the particular combination of ethylene-vinyl acetate and paraffin wax from the 21 different component materials recited in *Yenni* through considerable effort and undue experimentation. Moreover, *Yenni* does not disclose or suggest anything about a phase-change material that has a reflow temperature that allows the thermally conductive material in particulate form suspended within the polymeric base material to flow into gaps and thereby at least reduce thermal impedance between the electronic device and the polymeric base material. As such, a person of ordinary skill in the art contemplating the teachings of *Maeda*, *Alderson* and *Yenni* would not have found it obvious to consider using a polymeric base material that comprises a phase-change material and up to 20% by weight of ethylene-vinyl acetate, where the phase-change material comprise a paraffin wax, a synthetic wax, or equivalents thereof, and where the phase-change material has a reflow temperature that allows the thermally conductive material in particulate form or particles suspended within the polymeric base material to flow into gaps and thereby at least reduce thermal impedance. As such, the Applicant submits that claims 1 and 27 are not obvious in view of the cited references.

Claim 2

The Final Office Action states on page 2 that *Alderson* teaches the functional equivalent of carbonyl iron and ferrite as an EM shielding material. But *Alderson* does

not teach the claimed carbonyl iron in the form of particles having a spheroid shape, and instead merely discloses that “suitable radar attenuating materials for inclusion in the hollows include carbon granules, carbon fiber, carbonyl iron.” (See *Alderson*, column 2, lines 15-17). Thus, the cited references (including *Alderson*) do not teach all of the claimed elements. The Applicant notes that obviousness can only be established if the prior art references “teach or suggest all the claim limitations” in accordance with MPEP § 706.02. As *Alderson* does not teach the claimed carbonyl iron in the form of particles having a spheroid shape, the Applicant submits that claim 2 is not obvious in view of the cited references.

Claims 4, 5, 6, 9, 12-15, 19-21, and 30-40

With regard to claims 4, 5, 6, 9, 12-15, 19-21, and 30-40, these claims ultimately depend from claims 1 or 27, which the Applicant believes to be allowable in view of the above remarks. Thus, claims 4, 5, 6, 9, 12-15, 19-21, and 30-40 should also be allowable.

II. Claims 10 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Maeda* (EP 0945916 B1) in view of *Alderson* (US Pat. No. 5,817,583) and in further view of *McCullough* (US 2002/0014748). This rejection is respectfully traversed.

Claims 10 and 13 depend from claim 1, which the Applicant believes to be allowable in view of the above remarks. Thus, claims 10 and 13 should also be allowable.

III. Claims 10, 12-15, 22, 23, and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Maeda* (EP 0945916 B1) in view of *Alderson* (US Pat. No. 5,817,583) and in further view of *Nakamura* (US Pat. No. 5,841,067). This rejection is respectfully traversed.

Claim 25

The Final Office Action states on page 3 that claim 25, which recites an adhesive based on an acrylic or silicon, is obvious over *Maeda* in view of *Alderson* and

Nakamura. But *Nakamura* does not teach an adhesive that is based on an acrylic or silicon. Instead, *Nakamura* only states that *Nakamura's binder* may comprise a silicon or acrylic resin. There is no reason why a person of ordinary skill in the art contemplating *Nakamura* would have found it obvious to include components of *Nakamura's resin binder* in an adhesive that performs a completely separate function and is entirely different from a matrix resin. Thus, a person of ordinary skill in the art contemplating *Nakamura's* resin would not have found it obvious to consider using an adhesive that is based on an acrylic or silicon as in claim 25.

Claims 10, 12-15, and 22-23

With regard to claims 10, 12-15, 22, and 23, these claims ultimately depend from claims 1, which the Applicant believes to be allowable in view of the above remarks. Thus, claims 10, 12-15, 22, and 23 should also be allowable.

IV. Claims 17 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Maeda* (EP 0945916 B1) in view of *Alderson* (U.S. Pat. No. 5,817,583) and further in view of *Yenni* (U.S. Pat. No. 6,090,728). This rejection is respectfully traversed.

As stated above, a person of ordinary skill in the art contemplating *Maeda*, *Alderson*, and *Yenni* would not have found it obvious to consider using a polymeric base material that comprises a phase-change material and up to 20% by weight of ethylene-vinyl acetate, where the phase-change material comprises a paraffin wax, a synthetic wax, or equivalents thereof, and where the phase-change material has a reflow temperature that allows the thermally conductive material in particulate form or particles to flow into gaps and thereby at least reduce thermal impedance (as recited in independent claim 1 from which claims 17 and 18 both depend). For these reasons alone, dependent claims 17 and 18 are allowable by virtue of their dependence from an allowable independent claim 1, and are also not rendered obvious by *Maeda*, *Alderson*, and *Yenni*. Moreover, *Yenni* also does not teach the additional features recited in claims 17 and 18. As such, the Applicant submits that the combination of *Maeda*, *Alderson*, and *Yenni* fails to render obvious claims 17 and 18.

V. Claims 22, 23, and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Maeda* (EP 0945916 B1) in view of *Alderson* (U.S. Pat. No. 5,817,583) and further in view of *Nakamura* (U.S. Pat. No. 5,841,067). This rejection is respectfully traversed.

The Patent Office relies on *Nakamura* merely for disclosing attachment of a magnetic material including resin via a pressure sensitive adhesive. *Nakamura* discloses a housing for electronic apparatus, which is protective against electromagnetic wave leakage. But *Nakamura* fails to remedy the shortcomings of *Maeda* and *Alderson* discussed above relative to claim 1, from which claims 22, 23, and 24 depend. Specifically, *Nakamura* fails to disclose a thermally conductive composite material including an electromagnetic-energy-absorptive material that includes carbonyl iron, or a polymeric base material that comprises a phase-change material and up to 20% by weight of ethylene-vinyl acetate. Thus, even assuming, *arguendo*, that it would have been obvious to combine *Maeda*, *Alderson*, and *Nakamura*, the suggested combination would still lack features recited by claims 22, 23, and 24. Therefore, the combination of *Maeda*, *Alderson*, and *Nakamura* fails to render obvious claims 22, 23, and 24.

VI. Claims 22, 23, and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Maeda* (EP 0945916 B1) in view of *Alderson* (U.S. Pat. No. 5,817,583) and further in view of *Ogihara* (U.S. Pat. No. 4,299,873). This rejection is respectfully traversed.

The Patent Office relies on *Ogihara* merely for disclosing a multilayer circuit board with a bonding layer containing organic and inorganic adhesives. *Ogihara*, however, fails to remedy the shortcomings of *Maeda* and *Alderson* discussed above relative to claim 1, from which claims 22, 23, and 26 depend. Specifically, *Ogihara* fails to disclose a thermally conductive composite material including an electromagnetic-energy-absorptive material, which includes carbonyl iron. Thus, even assuming, *arguendo*, that it would have been obvious to combine *Maeda*, *Alderson*, and *Ogihara*, the suggested combination would still lack features recited by claims 22, 23, and 26.

Therefore, the combination of *Maeda*, *Alderson*, and *Ogihara* fails to render obvious claims 22, 23, and 26.

For at least the reasons above, the Examiner is respectfully requested to reconsider and withdraw the §103 rejections of claim 22, 23, and 26.

NEW CLAIMS 51-60

New claims 51-60 are supported by the application as originally filed. See, for example, paragraph [0050] of the application as published as U.S. Patent Application Publication 2006/0099403. In addition, claims 51-60 ultimately depend from claim 1 or 27, which Applicant believes to be allowable in view of the above remarks. Thus, dependent claims 51-60 should also be allowable.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (314) 726-7500.

Applicant believes that the correct fees have been paid in connection with this filing. If, however, Applicant owes any fee(s), the Commissioner is hereby authorized to charge the fee(s) to Deposit Account No. 08-0750. In addition, if there is ever any other fee deficiency or overpayment under 37 C.F.R. §1.16 or 1.17 in connection with this patent application, the Commissioner is hereby authorized to charge such deficiency or overpayment to Deposit Account No. 08-0750.

Respectfully submitted,

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